COCHIN LEGISLATIVE COUNCIL.

PROCEEDINGS.

(Budget Session of 1100.)

Thursday, the 6th of August 1925.

The seventh meeting of the Budget Session of the Council was held in the Town Hall on Thursday, the 2nd of Karkadagam, corresponding to the 6th of August 1925. The proceedings commenced at 1-30 a. m., the President being in the chair. Messrs. T. V. Kasturi Ranga Ayyar, Lonappan Chakkola, P. Munda Vaidyan, Paulo Mampilli, E. Simpson and Dr. A. R. Menon were absent.

President.—We shall begin with Questions and Answers as usual.

Questions and Answers.

Chitrapuzha Thodu.

Mr. K. S. RAMA AYYAR (*Trippunittura*).

80. Will the Government be pleased to lay on the table all the papers in connection with the *Thodu* from the Chitrapuzha to the Karingachirapuzha and hence to the backwaters in the Cochin-Kanayannur Taluk, regarding which there were several representations to the Government in the shape of petitions, memorials and deputations, and regarding which there was some correspondence between the Travancore Government and the Cochin Government and some correspondence between the Government of Cochin and the Engineering Department of the State ?

Mr. V. K. ARAVINDAKSHA MENON (*Chief Engineer*).

Copies of relevant papers on the subject are laid on the table. (*Vide Appendix 1.*)

Hydro-Electric Scheme.

Mr. K. S. RAMA AYYAR (*Trippunittura*).

81. Will the Government be pleased to state whether they have any idea of reconsidering the Hydro-

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(b) The Government is aware that meters are introduced, not only on all industrial and commercial water services, but also on private services as well. The general adoption of meters is enforced on all Municipal Councils by the Sanitary Engineer to the Madras Government; and I am informed that all the Municipal Towns in the Madras Presidency have meters on private connections as well. Their fixture is enforced on all the service pipes in places where the limits of the design have been over-reached.

APPENDIX 1.

Chief Engineer's letter, dated the 9th of March 1916, C. No. 19/91.

"Adverting to the P. W. D. official memorandum dated 14th August 1915, Dis. No. 1053/D/91, forwarding for consideration of the committee a petition, dated 12th Karkadagam 1090, from the ryots of Tiruvankulam and Kurikkad villages, praying for the opening of a canal for the protection of their fields, I have the honour to inform you that, it being purely an irrigation matter, I have dealt with it myself and beg to report as follows:—

The lands mentioned in the petition are primarily single crop *Puncha nilams* lying on the eastern side of the Tiruvankulam, Kurikkad and Kanayannur villages—please vide sketch enclosed—and situated at a comparatively lower level than the adjoining lands with the result that the drainage water from the latter stagnates in these—very often with disastrous effects on the crops, raised in them. The small river to the east of these *nilams*, which forms the boundary between Travancore and Cochin, is the only drainage channel through which the water from these *nilams* can possibly find its way into the backwater; and from past experience, it is found to be inadequate for the purpose. Thus the petitioners' request for a drainage canal for the proper and efficient drainage of their paddy fields deserves consideration.

With regard to the alignment of the canal, it is not possible to fix the same, without conducting a preliminary survey of the site. However, three routes have been suggested, as shown in the sketch. The route A B C D runs through, more or less, *Poramboke*

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canals, so that the cost of land acquisition and reclamation can be minimised. Of the other routes, A B E F has the advantage of being short and comparatively straight, but the cost of land acquisition will be great, whereas, if the route X Y Z is to be followed, the necessity of one of the bridges can be avoided. The whole length of the canal will be about 2½ miles. While it is not possible to give comparative figures, for the routes above mentioned, in the absence of a careful survey of the site, the following rough estimate, for one of the routes A B C D, will give a general idea of the probable cost of the scheme.

	Rs.
Land acquisition	12,000
Earthwork excavation	15,000
2 bridges, one on the Tiruvankulam road and one on the Udayamperur road	20,000
1 foot bridge	1,000
Contingencies	2,000
Total Rs.	50,000

The statement appended below will give an idea of the extent of *nilams* benefited.

	Puncha.	*Kari*.	Total.
Tiruvankulam	200 acres	560 acres	760 acres
Kurikkad	100 ,,	...	100 ,,
Kanayannur	30 ,,	...	30 ,,
Tekkumbhagam	200 ,,	...	200 ,,
Nadamel	...	460 ,,	460 ,,
Total	530 ,,	1,020 ,,	1,550 ,,

Thus, the total extent of land benefited comes to 1,550 acres, including the *Kari* lands—1,020 acres—lying on either side of the Konath river which, it is also reported, suffer from want of adequate drainage. The canal, besides ensuring protection to these *nilams*, would, it is claimed, further facilitate the conversion of *Puncha nilams* into double crop *nilams*, thereby making them susceptible of increased assessment.

The original enclosure is herewith returned.

PROCEEDINGS OF THE DIWAN OF COCHIN.

(PUBLIC WORKS DEPARTMENT).

Read again letter, dated 6th May 1913, S. C. No. 656/88, from the Diwan Peishkar.

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Read also the subsequent correspondence, ending with the Chief Engineer's letter, dated 9th March 1916, C. No. 19/91.

Order, dated 29th March 1916, Dis. No. 650/D/91.

A copy of the Chief Engineer's letter, read above, together with the sketch and the petition, referred to therein, is herewith forwarded to the Diwan Peishkar, for incorporation of the scheme in his report, in connection with the improvement of irrigation in the State.

(True extract) (Sd.)

Secretary to the Diwan.

To

The Diwan Peishkar.
,, Chief Engineer.

Diwan Peishkar's letter, dated the 3rd of January 1918, S. C. No. 595/93.

"With reference to your Official Memorandum, dated 26th December 1917, C. No. 320/1093, I have the honour to inform you that the canal, connecting Karingachira with the backwater, referred to therein is identical with the work of opening drainage canals for the benefit of *Kari* and *Puncha vilams* in Tiruvankulam, Kurikkad and other villages, referred to as item No. (2) under Cochin-Kanayannur Taluk, in the appendix to the D. P. of 6th November 1917, C. No. 644/92.

2. I prefer the alignment A B C D marked in the sketch that accompanied the Chief Engineer's letter, dated 9th March 1916, C. No. 19/91 (D. P. dated 29th March 1916, Dis. No. 650/D/91). It will be seen from that sketch that the proposed canal consists of two distinct parts, namely, (1) A B, passing through the Tiruvankulam village, and (2) C D, passing through the Tekkumbhagam village. The drainage of wet lands (known as Kizhakkumpuram *Punchappadam*) in Tiruvankulam and Kurikkad villages to the east of the saddle in these two villages, bordering the Travancore territory, can be improved only if both the sections of the canal A B and C D are opened. But the wet lands in the western halves of Tiruvankulam and Kurikkad villages and those in

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the east of Nadamel and Tekkumbhagam villages will be benefited, if C D alone be opened now. Canal A B will also benefit a large extent of *nilams* in Travancore territory. I have referred to the utility of this work in detail, in para 9 (2) of my letter, dated 22nd September 1916, S. C. No. 505/1091.

3. The alignments of the canals A B and C D have been marked in copies of the village maps of Tiruvankulam and Kurikkad villages, which are forwarded herewith for reference. A regular survey may be ordered to be conducted by the Department of Public Works. Levels may be taken and the alignment finally fixed.

4. I think that the canal C D in Tekkumbhagam village may be taken in hand first. The Special Engineer may be asked to take up the investigation of this work. The work, if started now, will afford some relief to the poorer classes of the population in this locality.

PROCEEDINGS OF THE DIWAN OF COCHIN.

(PUBLIC WORKS DEPARTMENT.)

Read again—

(1) D. P., dated 25th September 1917, Dis. No. 101/D/93.

Read also

(2) D. P., dated 19th December 1917, C. No. 320/93.

(3) Official Mmorandum, dated 26th December 1917, C. No. 320/93.

(4) Diwan Peishkar's letter, dated 3rd January 1918, S. C. No. 595/93.

And (5) Diwan Peishkar's letter, dated 6th January 1918, S. C. No. 578/93.

Order, dated 16th January 1918, C. No. 320/93.

In the D. P. read as 1st paper above, the Chief Engineer was ordered to take up urgently the P. W. D. works likely to give coolie employment in the backwater areas, without delay. The Diwan Peishkar now reports that in the backwater villages of Cochin-

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Kanayannur, Cranganur and Mukundapuram Taluks and in the Enamakkal region of the Trichur Taluk there is a certain amount of depression among the poor classes engaged in the industries connected with the cocoanut.

2. With a view to alleviate the distress, the Diwan Peishkar makes the following proposals :—

"Unemployment or actual want of work has not yet manifested itself to any large extent. It will, however, afford some relief to the labouring classes and ease the situation, if some works are started in the backwater villages. They need not be undertaken departmentally as relief works. It will be enough if the works are undertaken *in the ordinary way* by the D. P. W., Town Council or the Sanitary Department, as the case may be. The works, if started, will attract local labour and afford some relief in the backwater areas.

The works that I would propose are the following.—

(1) *Improvements to the Mattancheri Town.*—There is a budget provision of Rs. 42,000 under this head for the current year. The President of the Town Council is drawing up proposals for utilising this amount. He may be asked to expedite them.

(2) *Improvements to the Cranganur Town.*—Proposals regarding this were submitted recently by the Chief Medical Officer and myself. A sum of Rs. 10,000 or so may be allotted for this purpose this year from the Cranganur funds.

(3) The new drainage canal in Tiruvankulam and Tekkumbhagam villages, proposed in my letter, dated 3rd Chingam 1093, S. C. No. 595/93.

(4) Enamakkal north to south road."

The departments responsible will be requested to take up the sanctioned works without delay.

3. A copy of the Diwan Peishkar's letter, read as 4th paper above, will be forwarded to the Chief Engineer. The Chief Engineer is informed that the Diwan Peishkar's proposal is approved.

The Chief Engineer will direct the Special Engineer to take up for investigation the irrigation work in question.

(True extract)

(Sd.)

Secretary to the Diwan.

To

The Chief Engineer (with encl).
" Diwan Peishkar (do).
" Chief Medical and Sanitary Officer.
" President, Town Council, Mattancheri.
" Local and Legislative Department (Medical and Sanitation.)
" Sarvadhikariakar (with copy of the Diwan Peishkar's letter, dated 3rd January 1918).

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Letter, dated the 19th of August 1918, C. No. 777/93, from the Chief Engineer.

"Adverting to the file of correspondence ending with the P. W. D. Proceedings, P. No. 83/93, dated 27th May 1918, I have the honour to report as follows regarding the result of the detailed investigations conducted by the Special Engineer with regard to the drainage of the low-lying *Kari* and *Puncha nilams* in the Tekkumbhagam, Nadamel, Tiruvankulam, Kurikkad and Kanayannur villages of the Cochin-Kanayannur Taluk.

1. *Correspondence with reference to the work.*—

The holders of the low-lying *Kari* and *Puncha nilams* in these villages have long been petitioning the Darbar for a suitable scheme ensuring the proper drainage of these lands, and the present investigations were taken up in pursuance of the Diwan's Order, Dis. No. 72/R/92, dated 22nd February 1917.

2. *Description of the lands to be benefited, their situation, present condition and disabilities.*—

The low-lying lands are chiefly of 2 classes, that is, *Kari nilams* and *Puncha nilams*.

The *Kari nilams* are the swamps lying between sandy ridges in the backwater areas, and are used for a special kind of paddy cultivation. The soil is saturated with saline matter, and is of soft, black, alluvial description, with a very small admixture of fine dark sand and much mica. The fields are subject to the influx of salt water, and can only be cultivated during the heavy rains of the south-west monsoon.

The *Puncha nilams* are chiefly single crop *nilams*, situated at a lower level than the adjoining lands, and are surrounded by elevated *parambas*. Rain water naturally finds its way into these fields and stagnates in them from Edavam to Vrischigam, and unless properly dealt with, turns the land sour.

The rainfall is very heavy, and is fairly regular as to time and quantity usually averaging 128 inches annually, most of which falls between the 1st of June and the 10th of September. 50 inches usually fall in the months of June and July, and it is these rains that overflood the lands.

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Seeds are generally sown in the *Kari nilams* during the early part of the south-west monsoon, and frequently, before the plants are sufficiently grown, the lands are flooded. As there is no proper system of regulating this properly, at present, crops are often ruined owing to the plant being drowned.

In the case of the *Puncha nilams*, the ryots have to wait for the water to be drained off considerably, before they can start agricultural operations; and, as the fields lie flooded from Edavam to Vrischigam, crops can be raised in them only between Vrischigam and Medam. These lands lie on either side of the Kaniavalli river and on the western border of the eastern river, which forms the boundary between Travancore and Cochin.

The eastern river runs south to north and has a total catchment area of about 21 sq. miles; and it is the only drainage channel for the low-lying *nilams* covering some 747·75 acres on the north side of the river in the Tiruvankulam, Kurikkad and Kanayannur villages In addition to the above area, this eastern river has to drain an area of about 200 acres of similar low-lying lands in the Travancore State.

The Kaniavalli river runs north to south, beginning at the Vettuveli *Chira* on the north and entering the Travancore State to the south. Like the eastern river, the Kaniavalli river also has to drain about 100 acres of land in Travancore State in addition to about 750·84 acres in Cochin. In short, this is the only means through which the low-lying lands on either side of it, both in Travancore and Cochin, can be drained.

Past experience has conclusively proved that these two rivers are inadequate in themselves for the drainage of the above lands; and the result is that a major portion of about 1,800 acres of low-lying lands lie under water, for an unduly long period, each year. These lands, therefore, must have some direct opening into the backwater, whereby they can be easily and effectively drained and the crops secured against inundation.

Apart from the evil of inundation, as explained above, the lands are also liable to the influx of salt water.

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But this is successfully overcome by the annual putting up of the Kaniavalli, Karingo and Vettuveli *Chiras* along the Kaniavalli river by the Cochin Darbar, and also by the putting up of a *Chira* in the eastern river by the Travancore and Cochin ryots conjointly, immediately after the north-east monsoon.

The scheme, therefore, only deals with the question of the adequate drainage of these areas.

3. *The extent of Cochin lands that will have to be served is shown below.*—

Name of Village.	*Kari nilams* in acres single.		*Puncha nilams* in acres double.	
	Acres.	Cents.	Acres.	Cents.
Tekkumbhagam ...	157	26	33	03
Nadamel ...	104	93	68	23
Triuvankulam ...	397	64	281	78
Kurikkad ...	116	89	248	33
Kanayannur ...	1	22	89	26
Total ...	777	94	720	63

Grand Total 1,498,57 acres.

4. *Proposed works.*—In order to remove the difficulties, referred to above, and to afford suitable and efficient drainage, it is proposed to open a new drainage channel in two distinct sections.

The first section, which should have a bottom width of 30 ft., side slopes 1 to 1 and fall of 1 ft. per mile, is to run through the Tiruvankulam village and connects the eastern river with the Kaniavalli river. The second section, which should have a bottom width of 50 ft. and side slope 1 to 1 and fall of 2 feet per mile, is to run through the Tekkumbhagam village, and connects the Kaniavalli river with the backwater on the west.

Section 1 is estimated to cost about Rs 42,400. By the opening up of this channel, all the low-lying Cochin lands, on the western border of the eastern river, to an extent of 747.73 acres and similar lands,

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in the Travancore State, covering about 200 acres will be directly drained into the Kaniavalli river; but this will only be efficient, when the second section is also opened up.

Section 2 is estimated to cost Rs. 57.300.

This alone, when opened, will benefit the Cochin lands, on the eastern side of the Kaniavalli river, in the villages of Tiruvankulam and Kurikkad and all similar lands, on the other side of the river, in the villages of Tekkumbhagam and Nadamel, to a total extent of 750·84 acres in Cochin and 100 acres in Travancore. Besides ensuring the satisfactory drainage contemplated, the canals will, when completed, be very useful for navigation purposes also.

Section No. 1 will cross the Tiruvankulam road, while No. 2 will cut the Udayamperur road, where suitable bridges, with sufficient headways for navigation purposes, will be constructed.

5. *Choice of alignments.*— The alignments recommended are marked GH and ABC in the sketches, and a key map is enclosed for convenient reference. They have been so made as to minimise the cost of land acquisition and construction, and to afford, at the same time, the maximum benefit possible to all the lands referred to. The alignments are identical with the one recommended by the Diwan Peishkar, in his letter, S. C. No. 595/93, dated 3rd January 1918, with some minor deviations necessary to avoid sharp bends and acquisition of very valuable property in the way.

During the investigations, several petitions have been received; both, in favour of and against, the alignments, as now finally recommended.

There are 5 petitions with reference to section 1 (GH). They are marked as 1, 2, 3, 4 & 5 in red ink. In the first two of them, headed by Kizhakkai Konnath Achyuta Menon, addressed to the Diwan and the Special Engineer, both dated, the 25th Edavam 1093, the petitioners pray for the opening of the canal GH. They are reasonable in their prayer, and the canal as aligned, when opened, will redress their grievances and satisfy a long felt want.

The 3 other petitions, the one, dated June 1918, to His Highness the Maharaja from Naliyath Pyli

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Thomman and others, the other, dated June 1918 to the Diwan from Naliyath Pyli Mathew and others, and the third, dated 11th Edavam 1093, to the Diwan Peishkar from Tiruvankulat Pappath Kunju Pappu and others are against this section of the scheme. These counter-petitioners represent that, by the opening of the canal, their lands, which are now safe, will be subject to inundation from the eastern river. This is not true. The petitions appear to have emanated purely from selfish motives. The proposed canal passes through lands belonging to some of the leaders of these petitions, and portions of their lands have necessarily to be acquired, which they evidently wish to avoid. The stated apprehensions, regarding the influx of salt water, are not real, inasmuch as automatic shutters are proposed for the sluices which will open at low tide and close against high tide. It will also be seen later on in this report, that, in the order of execution, section 2 has been recommended to be completed and results carefully observed, before section 1 is put in hand. When all necessary precautions will be taken, this will secure the petitioners' lands from any possible inundation from the eastern river through the canal GH. The petitioners, therefore, have no reasonable grievances in the matter.

There are six petitions with reference to the alignment of the second section ABC. They are marked as a1, a2, a3, and b1, b2, and b3 in blue pencil.

The first three of these petitions are against any line to the south of Trippunittura, and pray for a line, marked EF, through the town itself. They represent that, when the line is opened through EF, the canal will, besides serving drainage purposes, greatly benefit the new Rama Varma Market at Trippunittura, that its revenue will be increased, so also the revenue from wharfage and cart-stand, that it will afford greater facilities for boat traffic, that the Trippunittura Town and the Hospital will be within convenient and easy reach for all classes of people, that caste disabilities for the low caste people having easy access into the town will be got over, that land acquisition charges will not be so much as for the other, and that some of the Travancore lands will be unduly benefited. But

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it may be observed that the Trippunittura Town, being already connected with all the principal places, both by road and backwater, it does not require these facilities for transport, and that the so-called increase in revenue is not real. For purposes of effectively draining so large an area as possible, the route ABC to the south of the town is, from an engineering point of view, preferable in every way to the one advocated by the authors of these petitions, as it will be better to have the drainage canal as much lower down as possible, in this case, to the south as the country has a general fall to this direction. Besides, if this line is adopted, it will, when connected with the backwater, be very near to the Nettutodu, the chief outlet to the *kayal* (reference solicited to the plan) and hence, the proposed channel ABC will better serve the purpose than the one prayed for by these petitioners.

Again, by following the alignment EF, land acquisition charges will be much heavier, as a number of good houses will have to be acquired. A foot-bridge, costing at least Rs. 2,500, will have to be constructed to give access to the Princes' Club and the Oottupura.

As regards the small Travancore area that will be benefited by aligning the canal as ABC, it may be observed that, owing to their natural situation with reference to the adjoining Cochin lands, the former will always have the benefit from the projected work, irrespective of the route that may ultimately be fixed. In any case, it is necessary to approach the Travancore Government in this matter and come to some definite understanding with that Darbar, with regard to the contribution towards the cost of the projected work, in proportion to the extent they benefit by the scheme. The petitioners think that, when the canal is opened as EF, much of the inconvenience caused by caste restrictions now felt by low caste people, who come to the Rama Varma Market, could be got over. That this object cannot be attained is evident from the petition headed by one Kunju Tirumulpad, Mutalpidi to His Highness Vīra Kerala Tampuran, marked B1, wherein the Mutalpidi raises objections to low caste men having access to this channel, when it approaches the Princes' Club and Oottu. It may also be noted

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that the cost of opening EF will come to Rs. 72,700 as per separate estimate, which forms an enclosure to this report. Hence the alignment EF, proposed by these petitioners, is more costly than ABC, which costs Rs. 57,300 only. Petitions b1 and b2 are headed by Kunju Tirumulpad, Mutalpidi of His Highness Vīra Kerala Tampuran and Tottuvayakkal Parameswaran Namburi. In the former, the petitioners strongly advocate the line ABC and condemn EF. They state that the alignment ABC will bring about efficient drainage, that it will only cause the minimum cost for land acquisition, that there is no difficulty for boat traffic at and near Trippunittura, as alleged in the petitions, which advocate the line EF, as there is already the Kottakidangu landing at Trippunittura, and the opening of a small road from it to the town is under contemplation. They further add that, from a religious point of view, there will be serious objections to low class people using the channel EF, as stated in the above para. They state also that, when the drainage water reaches the wet lands to the west of the town, known as the "Udayamperur Kari," it will have to be taken south along the backwater to a greater distance than what will be the case in the alignment ABC.

In the other petition b2, the petitioners say that the line through Trippunittura, if preferred, will do them more harm than good and will be courting danger, as drainage water from the eastern fields also will get into their already flooded lands, with greater danger to the crops on these lands. They, therefore, pray that either the canal should be aligned far to the north of the Trippunittura Town, connecting it directly with the Ernakulam *Kayal*, as marked KL in the plan, or the one to the south; that is, ABC should be adopted. But, with regard to KL, it has to be said that the area served will be far less than by ABC, and as the object of the scheme is to effectively drain as large an area as possible, the alignment KL has to be abandoned.

In b3, the petition from one Nīlakanda Pillai and others, they pray for slight modifications in the alignment ABC, as certain houses and properties belonging to the leaders of this petition are liable to

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be acquired for the work, and, therefore, they pray that the channel may be aligned as ABD. But the alignment ABD will be longer than ABC by 573 ft. and will be farther away from the Nettuthodu. The cost of ABD will come to Rs. 62,300, as per estimate enclosed, as against Rs. 57,300 for ABC, which has been proposed, after going into the matter very carefully. Further, economy and efficiency would warrant the adoption of the line ABC.

6. *Order of urgency of the work.*—Section 2 ABC, which connects the Kaniavalli river with the backwater, should be taken up first for execution. This costs Rs. 57,300. After gaining experience by its actual working, section 1 (GH) which connects the eastern river with the Kaniavalli river may be taken up. This costs Rs. 42,400. Since an area of about 200 acres, in the Travancore territory, will also be benefited by this section of the canal, besides 747·73 acres in Cochin, the work may be done, only if the Travancore Darbar agree to contribute a proportionate share of the cost of the work. It is to be hoped that the Travancore Darbar will be willing to bear their share of the cost in proportion to the area benefited in their territory.

7. *Efficiency of the proposed works and other auxiliary works that may be necessary.*— The efficiency of the projected works solely depends upon the fall in the water level of the eastern river in the different seasons of the year from that in the Kaniavalli river and thence to the backwater in the west.

From local enquiries, it is seen that there will be a fall of less than 1'-5" in the first case and 2'-0" in the second case. The backwater is affected by tides, and these appear to rise about 2 ft. and flow at the rate of 2½ miles an hour, except during the monsoon, when the rapidity depends on the volume of freshes. Its water is saltish, but during rainy season it is almost fresh and so it is expected that, especially, during the low tides in the monsoon month, the drainage will be more effective, and there will be no danger of salt water finding its way into the fields.

The Kaniavalli and the eastern rivers are also reported to be affected by tides, though in a much less degree. Gauges have been put up recently, in both the rivers as well as the backwater, and observations are

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being made, thrice at fixed hours, that is 6 a. m., 12 noon and 6 p. m. every day, in order to ascertain the surface fall that will be available in the different seasons; and the success of the scheme can be assured, only after these observations, which are to be made for not less than 6 months, show that the available fall will be quite adequate for our purpose. To prevent the influx of the water from the backwater into the canal, sluices have to be put up with automatic shutters, which will drain the channel at low tide but close against the rising tide. As there may be difference in level between the backwater surface and the proposed canal, a tidal lock will also be necessary for affording transport facilities to boats in all seasons. The sluice and the lock, referred to above, can be suitably designed, only after the results of the observations now being made are definitely known. The cost of these items are not, therefore, included in the present estimate.

8. *Land acquisition charges, other expenditure, etc.*—It is expected that the spoil got from the excavation of the channel will mostly be utilised by the interested ryots for raising their lands and gardens in the vicinity, and hence no provision is made to acquire lands for depositing the spoil. As, however, there may not be people coming forward to remove the spoil, from where the alignment of section GH crosses the Tiruvankulam road, especially, in the cutting at the high level wet fields, provision has been made in the estimate for the acquisition of the necessary land for such banks at the locality. In other cases, every endeavour has been made to acquire only such lands, houses, gardens, etc., as will be absolutely necessary for the work. All incidental charges, such as shed for workmen, and materials, as can be foreseen, in addition to the usual 5 per cent for unforeseen charges, have also been provided for in the estimate.

9. (a) *Finance and return.*—The work will be purely protective, for the time being, and hence, no immediate revenue can be expected. Owing to the acquisition of lands, wet and dry, and gardens, etc., for the work, capitalization of the abetment of land revenue on areas covered by works has also been made in the estimate. I would, however, respectfully suggest a form of poll-tax, immediately benefits are proved.

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(b) *Recurring expenses.*— For the maintenance of the channels, two watchmen on Rs. 6 per mensem will be necessary and if the tidal lock, referred to in para 7 *supra*, be also found indispensable, an additional establishment of 4 men at Rs. 6 a month will also be necessary throughout the year. Taking also into account a small annual sum that will be required for the periodical repairs to the lock-gates, a total amount of Rs 600 will have to be allotted annually on account of the work.

10. *Result.*—The low-lying lands, in the areas commanded by the channels, will be effectively drained and saved from inundation. This being realised, it will be possible in future to raise double crop at least portion of the present single crop *nilams*, with consequent increase in revenue, and during the next settlement, the present rates could certainly be enhanced.

11. *Time within which the work can be done.*— Each section of the canal may take one full season for execution; and, as the health of the locality is good, markets easily accessible and all facilities easily available, there can be no trouble in the satisfactory execution of the works. Skilled labour, however, will have to be imported into the country for the construction of the bridges and other masonry works.

12. Specification for coursed rubble, second sort, in mortar is enclosed. For all other works, the standard specifications of the department is to be strictly followed.

13. *Conclusion.*—The works will add to the wealth of the country both by the enhanced value of the land and the products of the country.

Under my instructions, all the connected papers were shown to the Diwan Peishkar by the Special Engineer; and a copy of the Diwan Peishkar's notes on the subject is enclosed for the Diwan's information.

As already mentioned in my letter, C. No. 1539/93, dated 17th July 1918 (please vide Public Works Department file, C. 1014/1093) the work cannot be taken up as a relief work immediately.

The results of the total observations, referred to in para 7 *supra*, will be watched carefully and reported in due course.

LIBRARY ARCHIVES Kerala Legislative Assembly

To avoid delay and expense of stationery, which has become very costly now, the plans and all the connected papers, as per enclosed list, are submitted in original. After the scheme is finally approved by the Diwan, these may be returned, when I shall submit estimates for the finally approved alignment in the formal way.

A copy of this report is being forwarded to the Diwan Peishkar also for his perusal.

I request that a date convenient to the Diwan may be fixed so that the Diwan Peishkar, myself and the Special Engineer may be present, when the Diwan goes into the matter.

PROCEEDINGS OF THE DIWAN OF COCHIN.

(PUBLIC WORKS DEPARTMENT).

Read again (1) D. P., dated 8th April 1918, P. No. 83 of 1093, regarding the Tiruvankulam canal scheme.

Read also (2) the subsequent correspondence, ending with the Chief Engineer's letter, dated 19th August 1918, R. O. C. No. 777 of 1093 reporting on the detailed investigations conducted by the Special Engineer on the subject.

Order, dated 11th September 1918, P. No. 67/93.

The Diwan has carefully considered the matter. He thinks that the line recommended by the Chief Engineer and the Diwan Peishkar is the best. The others would involve far too costly acquisition. At present no final decision can be taken, as the P. W. D. says that, until readings of the rise and fall of tide for some months more are taken, nothing definite can be stated. The Chief Engineer is requested to report directly, if definite data are available.

(True extract)

(Sd).
Secretary to the Diwan.

To

The Chief Engineer
Diwan Peishkar.

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Letter, dated the 18th of September 1919, P. No. 67 of 93, to the Diwan of Travancore.

I have the honour to bring to your notice that the ryots owning lands in the villages of Tekkumbhagam, Nadamel, Tiruvankulam, Kurikkad and Kanayannur villages of Cochin-Kanayannur Taluk, adjoining the Aykaranad of Travancore, have been petitioning the Darbar for some time to evolve a suitable scheme, ensuring proper drainage and successful cultivation of their lands. The Travancore ryots, in the locality, who possess lands, are also reported to be labouring under similar disadvantages.

2. A sketch of the locality is enclosed. To afford suitable and efficient drainage, it is proposed to open a new drainage channel in two distinct sections. The alignments are marked as ABC and GH. An extract, from the report of the Chief Engineer of this State, describing the lands, their situation and embodying the works, recommended on the preliminary investigations carried out, is given below :—

The low-lying lands are chiefly of 2 classes, that is, *Kari nilams* and *Puncha nilams*.

The *Kari nilams* are the swamps lying between sandy ridges in the backwater areas, and are used for a special kind of paddy cultivation. The soil is saturated with saline matter, and is of soft, black, alluvial description, with a very small admixture of fine dark sand and much mica. The fields are subject to the influx of salt water, and can only be cultivated during the heavy rains of the south-west monsoon.

The *Puncha nilams* are chiefly single crop *nilams*, situated at a lower level than the adjoining lands and are surrounded by elevated *parambas*. Rain water naturally finds its way into these fields, and stagnates in them from Edavam to Vrischigam, and unless properly dealt with, turns the land sour.

The rainfall is very heavy and is fairly regular as to time and quantity, usually averaging 128 inches annually, most of which falls between the first of June and the 10th of September. 50 inches usually fall in the months of June and July, and it is these rains that overflood the lands.

Seeds are generally sown in the *Kari nilams* during the early part of the south-west monsoon; and frequently,

LIBRARY ARCHIVES Kerala Legislative Assembly

before the plants are sufficiently grown, the lands are flooded. As there is no proper system of regulating this properly, at present, crops are often ruined, owing to the plant being drowned.

In the case of the *Puncha nilams* the ryots have to wait for the water to be drained off considerably, before they can start agricultural operations, and as the fields lie flooded from Edavam to Vrischigam, crops can be raised in them only between Vrischigam and Medam. These lands lie on either side of the Kaniavalli river and on the western border of the eastern river, which forms the boundary between Travancore and Cochin.

The eastern river runs south to north, and has a total catchment area of about 21 sq. miles; and it is the only drainage channel for the low-lying *nilams*, covering some 747·73 acres on the north side of the river, in the Tiruvankulam, Kurikkad and Kanayannur villages. In addition to the above area, this eastern river has to drain an area of about 200 acres of similar low-lying lands in the Travancore State.

The Kaniavalli river runs north to south, beginning at the Vettuveli *Chira* on the north and entering the Travancore State to the south. Like the eastern river, the Kaniavalli river also has to drain about 100 acres of land in Travancore State, in addition to about 750·84 acres in Cochin. In short, this is the only means through which the low-lying lands on either side of it, both in Travancore and Cochin, can be drained.

Past experience has conclusively proved that these two rivers are inadequate, in themselves, for the drainage of the above lands; and the result is that a major portion of about 1,800 acres of low-lying lands lie under water, for an unduly long period, each year. These lands, therefore, must have some direct opening into the backwater, whereby they can be easily and effectively drained and the crops secured against inundation.

Apart from the evil of inundation, as explained above, the lands are also liable to the influx of salt water.

But this is successfully overcome by the annual putting up of the Kaniavalli, Karingo and Vettuveli *chiras* along the Kaniavalli river, by the Cochin Darbar,

LIBRARY ARCHIVES Kerala Legislative Assembly

and also by the putting up of a *chira* in the eastern river by the Travancore and Cochin ryots conjointly, immediately after the north-east monsoon.

The first section, which should have a bottom width of 30 ft., side slopes 1 to 1 and fall of 1 ft. per mile, is to run through the Tiruvankulam village, and connects the eastern river with the Kaniavalli river. The second section, which should have a bottom width of 50 ft. and side slope 1 to 1 and fall of 2 feet per mile, is to run through the Tekkumbhagam village, and connects the Kaniavalli river with the backwater on the west.

Section 1 is estimated to cost about Rs. 42,400. By the opening up of this channel, all the low-lying Cochin lands, on the western border of the eastern river, to an extent of 747·73 acres, and similar lands, in the Travancore State, covering about 200 acres will be directly drained into the Kaniavalli river, but this will only be efficient, when the second section is also opened up.

Section 2 is estimated to cost Rs. 57,300.

This alone, when opened, will benefit the Cochin lands on the eastern side of the Kaniavalli river, in the villages of Tiruvankulam and Kurikkad and all similar lands on the other side of the river, in the villages of Tekkumbhagam and Nadamel, to a total extent of 750·84 acres in Cochin, and 100 acres in Travancore. Besides ensuring the satisfactory drainage contemplated, the canals will, when completed, be very useful for navigation purposes also.

Section No. 1 will cross the Tiruvankulam road, while No. 2 will cut the Udayamperur road, where suitable bridges, with sufficient head-ways for navigation purposes, will be constructed.

3. The total cost of the scheme outlined comes roughly to Rs. 1,07,200, as subjoined:

		Rs
Cost of sections, A B C	....	57,300
,, G H	....	42,400
,, automatic sluices	....	7,500

4. Since an area of about 300 acres in the Travancore territory will be benefited by opening the two sections, I request that you will be good enough to

LIBRARY ARCHIVES Kerala Legislative Assembly

inform me whether the scheme commends itself to the Travancore Darbar; and if so, whether they are willing to contribute towards the cost of the original works proposed, as well as that of annual maintenance, that may be required, in proportion to the area benefited by the scheme. I request that an early reply may be sent.

5. I shall send a formal estimate, if the scheme has your approval generally.

Letter, dated the 5th of July 1921, C. No. 499/95, from the Assistant Engineer, Eastern Division.

With reference to your endorsement on C. No. 667/93, dated 16th June 1921, regarding the Tiruvankulam Canal Scheme, I have the honour to report that I met Mr. Mani, the Travancore P. W. D. Division Officer at Alwaye, on the 2nd instant and explained to him the doubtful points.

The details asked for by Mr. Kurian, the then Travancore P. W. D. Division Officer, Alwaye, are appended hereunder: —

Re: 2 I of his letter, dated 22nd April 1920, No. 324.

The lands in our State, in the valley of the eastern river, proposed to be benefited by the drainage scheme are not only single crop *Puncha lands* but also a large extent of single crop *Kari nilams* and double crop lands. There are such lands in the Travancore State also, in the same valley, and the exact extent may kindly be ascertained from the Travancore Revenue Department and got verified by our State Revenue Department.

As I pointed out, in person, to Mr. Mani, there will be some Travancore lands in the Kaniavalli valley also. These lands will be to the south of the Kaniavalli *Chira*, which is the boundary between the States; and they will be beneficially affected by the proposed drainage scheme, as the Kaniavalli *Chira* is generally put up only by about the 30th of Vrischigam, that is, the middle of December, and as, till then, the Travancore lands also may be drained by means of the proposed drainage channel through the Kaniavalli river. The extent of such lands, if any, may kindly be ascertained from the

LIBRARY ARCHIVES Kerala Legislative Assembly

Travancore Revenue Department and got verified by our Government Revenue Department.

Re: 2 II. As referred to above, monsoon crpo lands in the eastern river valley are also proposed to be benefited. At the time when the lands in the eastern river valley require drainage, lands in the Kaniavalli river valley will no doubt be under crop; and in order that these lands may be efficiently drained, not only of their own surplus water but also that of the lands on the eastern river valley, the section of the drainage channel from the Kaniavalli river to the backwater on the west has been, among other reasons, given a greater section. Besides, as already stated, the channel for the drainage of the lands, in the valley of the eastern river, will be taken up only after the proposed channel, connecting the Kaniavalli river with the backwater, has been first executed, and the results of its actual working show that the opening of the other channel will be warranted.

Re: 2 III. A regulator at a cheap cost may be had either at the head of the cut from the eastern river, where there is good laterite rock found for foundation, etc., or it may be combined with the proposed bridge across the Tiruvankulam road at a cheap extra cost. No lock is contemplated now. The boats will have to be tugged out or the goods transported. This will, no doubt, afford better facilities of communication by water than what it is now. A lock may eventually be had, provided the boat traffic here will warrant such a work.

Re: 2 IV. As referred to in para 10 of the report that accompanied the estimate for the scheme, it is expected that the "low-lying lands will be effectively drained and saved from inundation. This being realised, it will be possible, in future, to raise double crop at least from a portion of the present single crop *nilams*, with consequent increase in revenue, and during the next Settlement the present rates could certainly be increased".

Re: 2 V. Before the cut 'G A' is made, it is essential that the drainage of the lands in the Kaniavalli valley is assured. It is hoped that the Travancore Darbar will be willing to bear their share of the cost, in proportion to the area, if any, benefited in their territory.

LIBRARY ARCHIVES Kerala Legislative Assembly

Re: 2 VI. Regarding this, kind attention is solicited to para 9 of the Report that accompanied the estimate for the scheme. As already referred to *supra*, the extent of the lands in the Travancore State in both the valleys may be accurately ascertained from the Travancore Government and verified by the Revenue Department of our State.

The average assessment of the Cochin lands proposed to be benefited may kindly be ascertained from the Diwan Peishkar and the information supplied.

As far as I am aware of, people are not willing to pay any additional cess. This may again be referred to the Diwan Peishkar.

The work will, I think, be purely protective for the time being, and no immediate additional revenue is expected.

Chief Engineer's letter, C. No. 667/96, dated the 27th of May 1922.

In continuation of my letter, dated 27th January 1922, and with reference to the P. W. D. Official Memorandum, P. No. 67/93, dated 20th April 1922, regarding Tiruvankulam Canal Scheme, I have the honour to inform you that the object of the proposed scheme is to get a direct outfall into the backwater, so that the depth and duration of submersion of the crops in this area during the floods may be considerably reduced. It will, as reported already, be of two sections :—

I. One cut connecting the Kaniavalli river with the backwater. This will cross the Udayamperur road by a suitable bridge.

II. The other cut will connect the eastern river with the Kaniavalli river and will cross the Tiruvankulam road by a bridge.

Item No. I is proposed to be executed first, and No. II will be taken up only after the results of No. I have been definitely known.

The Executive Engineer, Alwaye Division, Travancore P. W. D., informs me that the Travancore Peishkar, after due enquiry, reports to him that the Travancore ryots are not benefited by cut No. I, which is proposed to be taken up first, and that, by cut No. II, which is to be considered only after the results of No. I

LIBRARY ARCHIVES Kerala Legislative Assembly

have been known, only 78·45 acres of Travancore lands stand a chance of being benefited. The Travancore ryots say that even that chance is remote and the Travancore Peishkar agrees with them.

The Travancore State will not, therefore, be interested in work of item No. I, nor will they contribute towards the work. Item No. II will have to be considered only after the results of No. I have been known, and so the question of their contribution, if any, towards this work does not arise now. As the Travancore officers say that the chance of Travancore lands being benefited by this is remote, the Travancore State is not likely to be interested in this work also, nor are they likely to contribute towards this work.

In this connection, I beg to bring to the Diwan's kind notice that the success of the scheme will depend entirely on the surface fall available from the eastern river to the Kaniavalli river, so far as cut No. II is concerned, and from the latter to the backwater, so far as cut No. I is concerned.

We put up gauges for this purpose and took readings for one season, that is, from July to December 1918. Though these readings were favourable, it will be very desirable to collect statistics of the actual surface fall available, before any large expenditure is decided upon. Prior to an important scheme being commenced, there should be a record of the available surface fall for several years. I would, therefore, suggest that gauges may be established for the purpose. As *chiras*, to prevent influx of salt water, will generally be put up by the end of Vrischigam, that is, the middle of December, and as they will be re-opened only before the south-west monsoon commences, gauge readings may be taken from 15th May to 15th December of every year, for some years. The Alwaye Executive Engineer recommends that the gauge readings which we took for one season, i.e., July to December 1918 may be continued for two years more in order to get at sufficient data regarding the surface fall available from the eastern river to the Kaniavalli river and from the latter to the backwater. I agree with him in thinking that the gauge readings should be continued for at least two years more. To ensure correctness, readings should be taken by a responsible member of the staff, as on

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these depends the success of the scheme. I would, therefore, propose to depute one of the section Superintendents of the Department for the purpose. The section Superintendent may have a maistry on Rs. 15 to help him. He may work under the Assistant Engineer, Southern Division, as the gauging operations can be better supervised and controlled by him. The gauge readings should be checked as often as possible by he Palace sub-Overseer near by and the Cochin-Kanayannur Taluk Overseer. The Assistant Engineer, Southern Division, may be asked to check them, at least once a fortnight.

On receipt of orders, I shall take the Assistant Engineer over the spot and furnish him with all the necessary details. Necessary estimate for continuing the gauge operation will be submitted on receipt of orders.

The probable cost will be Rs. 150 in the first year and Rs. 115 in the next, the pay of the Section Superintendent not being included therein.

Solicit early orders for establishing the necessary gauges from the 15th of June.

Travancore Diwan's letter, dated the 13th of April 1922, Dis. 396/22/P. W.

"With reference to the correspondence, ending with your letter, No. R. O. P. 67/93, dated 19th June 1920, I have the honour to inform you that I understand that the scheme is not likely to benefit Travancore ryots. The Darbar therefore regrets that it is unable to contribute towards its cost.

The sketch received with your letter, No. P. 67/93, dated 18th September 1919, is returned."

PROCEEDINGS OF THE DIWAN OF COCHIN.

(PUBLIC WORKS DEPARTMENT.)

Read letter, dated 27th May 1922, C. No. 667/96, from the Chief Engineer, regarding Tiruvankulam Canal Scheme.

LIBRARY ARCHIVES Kerala Legislative Assembly

Order, dated 10th June 1922, P No. 67/93.

The Chief Engineer's proposals for continuing gauge operations are accepted, and he is requested to submit the necessary estimate for sanction.

(True Exhact)

(Sd.)
Secretary to the Diwan.

To
The Chief Engineer.

Chief Engineer's letter, dated the 18th of February 1925, C. No. 1290/1099.

"With reference to the work of providing gauges for the Tiruvankulam Canal, referred to in P. W. Department file, P. No. 67 of 93, I have the honour to report that an expenditure of Rs. 50 will be necessary for providing reinforced concrete gauges in place of the wooden ones originally set up and washed off.

I request sanction for the expenditure which may be met by transfer from B. I 223 of 1100.

The transfer application is enclosed."

PROCEEDINGS OF THE DIWAN OF COCHIN.

(PUBLIC WORKS DEPARTMENT.)

Read letter, C. No. 1290 of 1099, dated 18th February 1925, from the Chief Engineer regarding R. C. gauges for the Tiruvankulam Canal.

Order, dated 7th March 1925, Dis. No. 798/D/1100.

Sanctioned.

(True extract)

(Sd.)
Secretary to the Diwan.

To
The Chief Engineer.
,, Comptroller of Accounts (with copy).

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